

NEWFOUND LAKE

2016 SAMPLING HIGHLIGHTS

Fowler River Subwatershed



Blue = Excellent

Yellow = Fair

Red = Poor

Light Gray = No Data

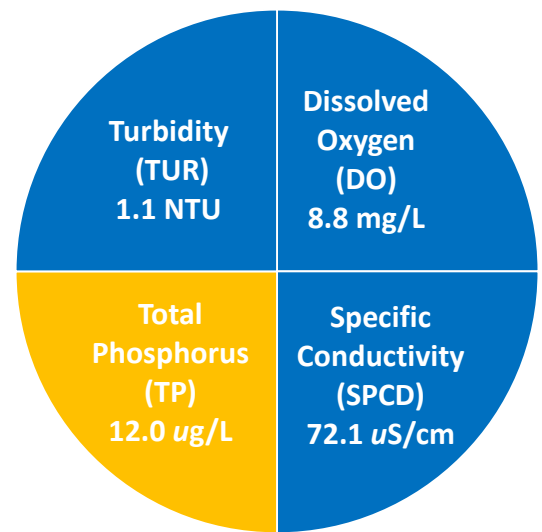


Figure 1. Fowler River Subwatershed Average Water Quality (2016)

Table 1. 2016 Fowler River Subwatershed Seasonal Average Water Quality Measurements.

Parameter	Assessment Criteria					Fowler River Subwatershed Average (range)	Fowler River Subwatershed Classification
Turbidity * (NTU)	< 0 - 5.0 Desirable	6 - 10 Low Impact	11 - 50 Moderate impact	51 - 100 Moderate - high impact	> 101 High impact	1.1 NTU (range: 0.5 - 2.5)	Desirable
pH (standard units)	< 5.5 suboptimal for successful fish growth and reproduction		5.5 - 6.5 sufficient for successful fish growth and reproduction		6.5 - 8.5 optimal range for fish growth and reproduction	5.5 standard units (range: 5.0 - 5.8)	Sufficient for successful fish growth and reproduction
Dissolved Oxygen (mg/L)	< 5 Suboptimal for successful brook trout growth and survival		> 5 Typically sufficient for successful brook trout growth and survival			8.8 mg/L (range: 3.7 - 12.0)	Typically sufficient for successful brook trout growth and survival
Specific * Conductivity (uS/cm)	0 - 100 Normal	101 - 200 Low Impact	201 - 500 Moderate Impact	> 501 High Impact		72.1 uS/cm (range: 11.4 - 359.3)	Normal
Total * Phosphorus (ug/L)	< 10 ug/L Ideal	11 - 25 Average	26.0 - 50.0 More than desirable	> 51 Excessive		12.0 ug/L (range: 4.7 - 92.7)	Average

* Water quality assessment criteria are provided by the New Hampshire Department of Environmental Services for general guidance only. Natural variations among rivers and streams will occur and should be considered when interpreting the water quality data.

Table 2. 2016 Fowler River Subwatershed Seasonal Average Water Quality Inter-comparison among Sampling Stations.

Site ID *	Average Turbidity (NTU)	Average Specific Conductivity (uS/cm)	Average Total Phosphorus (ug/L)	Average Dissolved Oxygen (mg/L)	Average pH (standard units)
FR-H20	1.4	45.1	12.8	10.8	5.5
FR-H21	1.9	52.2	20.4	9.7	5.6
FR-H22	1.2	36.5	31.9	11.8	5.5
FR-U05	0.9	83.5	6.2	8.5	5.6
FR-U10	0.7	66.7	6.6	7.3	5.6
FR-U20	0.7	55.2	8.9	9.0	5.1
FR-U25	0.9	55.3	8.4	8.4	5.0
FR-U30	1.3	159.3	8.3	7.8	5.8
FR-U40	1.5	81.5	13.3	7.7	5.7
FR-U50	0.5	49.6	6.7	8.3	5.0
FR-U60	1.0	108.7	8.2	8.2	5.7

* Refer to Figure 4 for a map of the sampling locations.

Fowler River Subwatershed Highlights

The Fowler River subwatershed is the largest river drainage network that feeds into Newfound Lake. The 22,713-acre Fowler River subwatershed is monitored with 11 active sampling locations that are positioned at various points along the Fowler River and its feeder streams. Sampling locations were selected to characterize the overall water quality and to screen for potential problem areas within the Fowler River subwatershed.

The 2016 Fowler River water quality measurements generally indicate high water quality among the sampling sites. However, variations in average specific conductivity concentrations (a surrogate for salt runoff) are visible (Figure 2). Several upstream sampling locations that include Sites FR-U30, FR-U40 and FR-U50, were characterized by higher specific conductivity measurements relative to the more downstream sampling locations. Low stream-flow conditions during the 2016 sampling season coincided with increased specific conductivity measurements at most Fowler River sampling locations (Figure 2) that likely reflect the concentration of salts into reduced water volumes. The pattern of elevated 2016 specific conductivity measurements, relative to the 2010-2015 measurements, was common among the majority of the Newfound Lake tributary inlets.

The 2016 average turbidity (suspended soil and other particles) levels were low while the average total phosphorus (nutrient) concentrations were low to moderate in the Fowler River subwatershed (Figure 3).

Brook trout, an indicator of high quality water, have frequently been observed during field sampling visits to the Fowler River and the affiliated feeder streams. Dissolved oxygen concentrations measured in the Fowler River tributaries generally remained within the range considered sufficient to support the successful brook trout growth and reproduction.

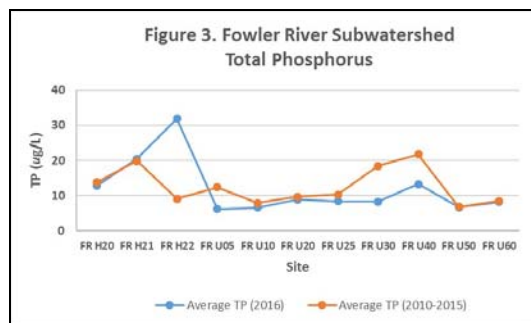
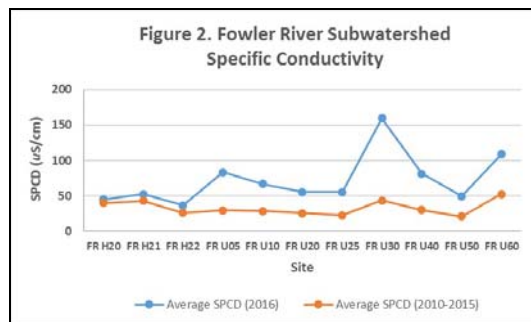


Table 3. Comparison of Seasonal Average Water Quality by Subwatershed (2016)

Subwatershed	Average * Turbidity (NTU)	Average * Specific Conductivity ($\mu\text{S}/\text{cm}$)	Average * Total Phosphorus ($\mu\text{g}/\text{L}$)	Average * Dissolved Oxygen (mg/L)	Average * pH (Standard Units)
Black Brook	2.1	143.7	18.9	7.5	5.8
Cockermouth River	0.4	52.6	5.0	7.9	5.9
Dick Brown Brook	1.2	45.2	14.4	10.8	6.3
Fowler River	1.1	72.1	12.0	8.8	5.5
Georges Brook	0.7	30.1	6.0	11.1	5.8
Hemlock Brook	0.7	47.2	7.2	9.0	6.3
Whittemore Brook	0.7	20.2	9.4	7.5	6.0
Tilton Brook	2.2	81.5	19.0	6.4	6.3

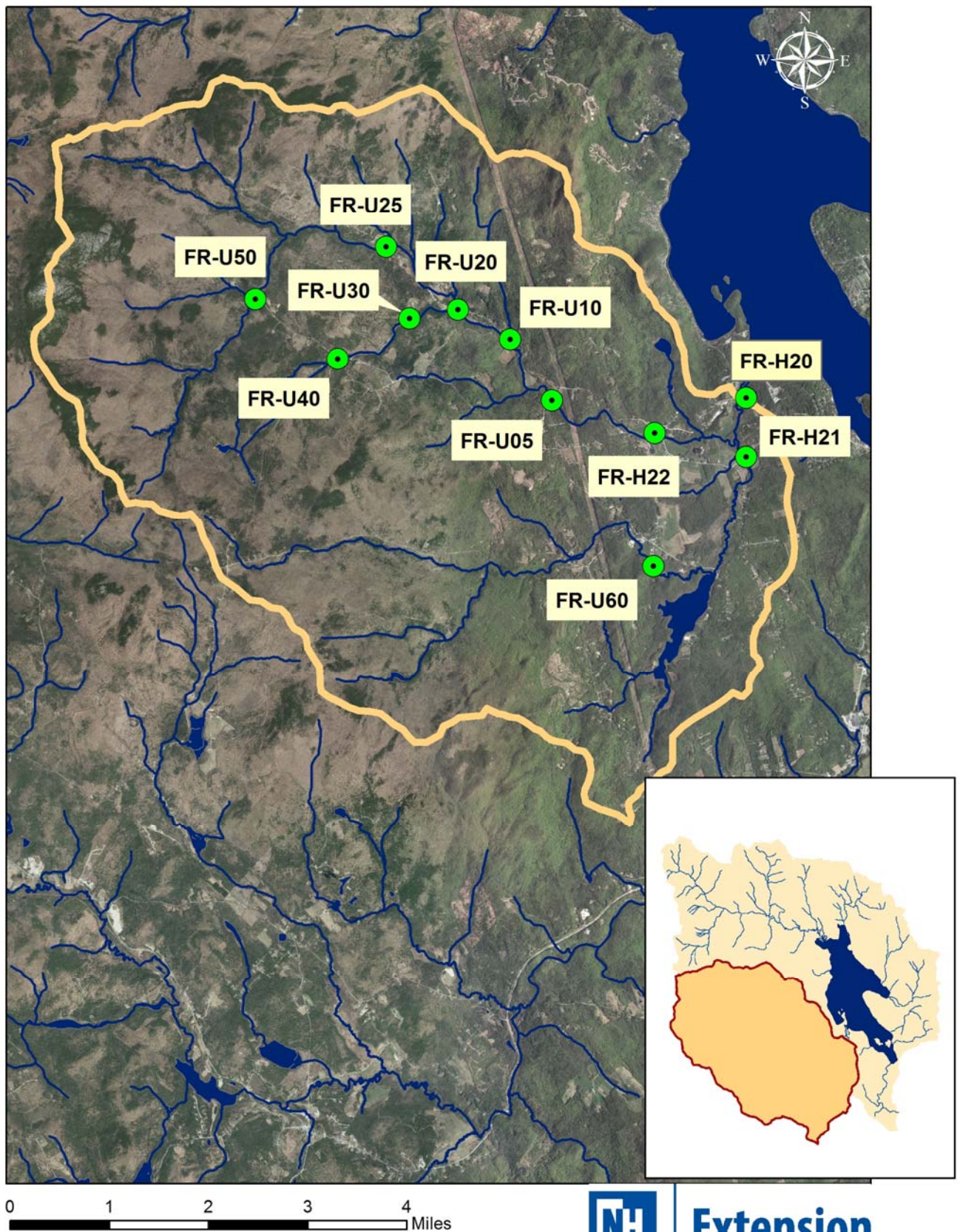
* The displayed water quality results are average values for all sampling locations within the respective subwatersheds.

Recommendations for Property Owners:

Implement Best Management Practices within the Newfound Lake watershed to minimize the adverse impacts of polluted runoff and erosion into the lake. Refer to “Landscaping at the Water’s Edge: An Ecological Approach” and “New Hampshire Homeowner’s Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home” for more information on how to reduce nutrient loading caused by overland run-off.

- http://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

Figure 4.
2016 Sampling Highlights - Fowler River Subwatershed



Aerial Orthophoto Source: NH GRANIT
Site location GPS coordinates collected by the UNH Center for Freshwater Biology



Extension